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BIOH 423.80: Human Form and Function Teaching Assistant I - Honors

Heather D. Labbe

University of Montana - Missoula, heather.labbe@umontana.edu

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BIOH 423: Human Form and Function Teaching Assistant I

Course Syllabus and Policies

Instructor: Heather Labbe

Office: ISB 103A **Phone:** 243-5436

Email: heather.labbe@mso.umt.edu

Office Hours: Tuesdays 9-11am (or by appointment)

This course is a practicum that provides the participant the ability to expand their anatomical and physiological knowledge base, professional growth, and public speaking skills. The participant will integrate anatomical knowledge and a strong understanding of physiological principles and put that knowledge base into practical use by providing lab based instruction to current BIOH 112 students.

This course will provide participants with the skills needed to establish and maintain an effective rapport with individual students/small student groups and to design instruction around adult learning principles. This course is open to students who received an 'A' or 'B' in BIOH 112 and 113, or those who have one year of upper division anatomical and physiological coursework with a cadaver lab. Consent of the instructor is also required.

Participants are required to:

- Teach at least 8 (1.5 hour) cadaver prosection tutorials a semester, each with a different focus topic relating to current lecture discussion material.
 - Generally, I use the "Doodle" appointment scheduling webpage to schedule your participation on the tutorial dates. You will receive an email asking you to respond to the Doodle poll and indicate your availability. You must do so prior to the poll deadline.
 - This semester's dates and times are as follows:
 - Thursdays 1:30– 3 PM
 - Fridays 2:30 – 4 PM
 - Sundays 7:00 - 8:30 PM
 - Mondays 9:00 – 10:30 AM
- Prosection 1: Overview of Organ Systems- Focus on Terminology and Identification
September 11th, 12th, 14th, and 15th
- Prosection 2: Focus on the Skeletal System and Articulations
October 9th, 10th, 12th, and 13th
- Prosection 3: Focus on Muscle Anatomy and Physiology
November 6th, 7th, 9th, and 10th
- Prosection 4: Focus on the Nervous System
December 4th, 5th, 7th, and 8th
- Meet for two hours with the course instructor and the other teaching assistants prior to each set of scheduled tutorials to familiarize oneself with the material and topics to be emphasized.
 - This semester, the course meeting time will be Wednesdays from 10am to noon on the Wednesdays prior to the prosection visits. If you are unable to attend at least one hour of these meetings, you must contact the instructor in order to arrange for an alternative prep time.

- Maintain open communication with the course instructor regarding student issues that may make themselves evident during lab tutorial sessions.
- Proctor exams for the BIOH 112 course (3 per semester including the final examination)
 - Exam dates this semester are: **October 2nd**, **November 6th**, and **December 10th**
- Provide assistance with grading, organizing teaching/exam materials, designing instructional rotations.
- Monitor the Moodle course website for important announcements.
- Attend two lectures to facilitate small group discussions on a pertinent clinical topic. TBA

Learning Goals (Adapted from the Human Anatomy and Physiological Society):

Upon completion of this course, a student will be able to:

1. Understand the complex principles associated with the Human Anatomy and Physiology and assist in teaching these concepts to students enrolled in BIOH112.
 - Demonstrate a vocabulary of appropriate terminology to effectively communicate information related to anatomy and physiology.
 - Demonstrate practical knowledge of human gross and microscopic anatomy.
 - Identify anatomical structures and explain the physiological functions of body systems.
 - Describe development, regeneration, normal function of body systems
 - Use anatomical knowledge to predict physiological consequences, and use knowledge of function to predict the features of anatomical structures.
 - Demonstrate understanding of chemical and biological principles and knowledge that serve as the foundation for understanding of human anatomy & physiology
 - Describe energy-transfer processes in human body & predict consequences of interrupted or pathologic energy transfer
 - Describe cellular processes governing development, growth, & normal function of the human body
2. Use a multi-modal instructional approach to help students enrolled in BIOH112 to better understand the complexity of the material.
 - Demonstrate laboratory procedures used to examine anatomical structures and evaluate physiological functions of each organ system.
 - Demonstrate the ability to present material effectively to small groups of adult learners.
 - Communicate clearly and in a way that reflects knowledge and understanding of the human body and demonstrates the ability to adapt information to different audiences and applications.
3. Understand and discuss the methodology and activities scientists use to gather, validate and interpret data related to natural processes as it applies to human anatomy and physiology.
 - Summarize and evaluate the experimental design and methodology of peer-reviewed research articles that relate to human anatomy and physiology.
 - Interpret graphs of anatomical and physiological data.
4. Detect patterns, draw conclusions, develop conjectures and hypotheses regarding normal human physiology and help students anticipate the pathophysiology that could result when homeostasis is disrupted.
 - Recognize and explain the interrelationships within and between anatomical and physiological systems of the human body.
 - Recognize and explain the principle of homeostasis and the use of feedback loops to control physiological systems in the human body.
5. Understand and discuss how scientific laws and theories are verified by quantitative measurement, scientific observation, and logical/critical reasoning as they pertain to advances in medical understanding.
 - Employ the scientific process for understanding principles of anatomy & physiology
 - Evaluate scientific value of new A&P observations & data
 - Synthesize ideas to make a connection between knowledge of anatomy and physiology and real-world situations, including healthy lifestyle decisions and homeostatic imbalances.

All BIOH 423 students will demonstrate competence in the topics listed below in order to assist with teaching BIOH 112 students.

HAPS Modules Learning Outcomes for BIOH 112:

Module A: Body Plan and Organization

Students who have completed this section of the course should understand the scope of studies in anatomy and physiology and be able to use and understand descriptive anatomical and directional terminology.

Topics:

- Anatomical position
- Body planes & sections
- Body cavities & regions
- Directional terms
- Basic terminology
- Levels of organization
- Survey of body systems

Module B: Homeostasis

Students who have completed this section of the course should be able to explain the basic concept of homeostasis and how homeostatic mechanisms apply to body systems.

Topics:

- General types of homeostatic mechanisms
- Examples of homeostatic mechanisms
- Application of homeostatic mechanisms
- Predictions related to homeostatic imbalance, including disease states & disorders

Module C: Chemistry & Cell Biology

Students who have completed this section of the course should be able to identify cellular structures and explain their respective functions.

Topics:

- Atoms & molecules
- Chemical bonding
- Inorganic compounds & solutions
- Organic compounds
- Energy transfer using ATP
- Intracellular organization of nucleus & cytoplasm
- Membrane structure & function
- Mechanisms for movement of materials across cell membranes
- Organelles
- Protein synthesis
- Cellular respiration (introduction)
- Somatic cell division
- Reproductive cell division
- Application of homeostatic mechanisms
- Predictions related to homeostatic imbalance, including disease states & disorders

Module D: Histology

Students who have completed this section of the course should be able to describe the basic tissues of the body and their location and explain their functions.

Topics:

- Overview of histology & tissue types
- Microscopic anatomy, location, & functional roles of epithelial, connective, muscular and nervous tissues
- Membranes (mucous, serous, cutaneous & synovial)
- Glands (exocrine & endocrine)
- Tissue injury & repair

Module E: Integumentary System

Students who have completed this section of the course should be able to identify and describe the major gross and microscopic anatomical components of the integumentary system and describe the functions of the system.

Topics:

- General functions of the skin & the subcutaneous layer
- Gross & microscopic anatomy of the skin
- Roles of specific tissue layers of skin & the subcutaneous layer
- Anatomy & functional roles of accessory structures
- Application of homeostatic mechanisms
- Predictions related to homeostatic imbalance, including disease states & disorders

Module F: Skeletal System & Articulations

Students who have completed this section of the course should be able to identify and describe the major gross and microscopic anatomical components of the skeletal system and explain their functional roles in osteogenesis, repair, and body movement.

Topics:

- General functions of bone & the skeletal system
- Structural components – microscopic anatomy
- Structural components – gross anatomy
- Physiology of embryonic bone formation (ossification, osteogenesis)
- Physiology of bone growth, repair & remodeling
- Organization of the skeletal system
- Gross anatomy of bones
- Classification, structure & function of joints (articulations)
- Application of homeostatic mechanisms
- Predictions related to homeostatic imbalance, including disease states & disorders

Module G: Muscular System

Students who have completed this section of the course should be able to identify and describe the major gross and microscopic anatomical components of the muscular system and explain their functional roles in body movement, maintenance of posture, and heat production.

Topics:

- General functions of muscle tissue
- Identification, general location, & comparative characteristics of skeletal, smooth, & cardiac muscle tissue
- Detailed gross & microscopic anatomy of skeletal muscle
- Physiology of skeletal muscle contraction
- Skeletal muscle metabolism
- Principles & types of whole muscle contraction
- Nomenclature of skeletal muscles
- Location & function of skeletal muscles
- Group actions of skeletal muscles
- Application of homeostatic mechanisms
- Predictions related to homeostatic imbalance, including disease states & disorders

Module H: Nervous System

Students who have completed this section of the course should be able to identify and describe the major gross and microscopic anatomical components of the nervous system and explain their functional roles in communication, control, and integration.

Topics:

- General functions of the nervous system
- Organization of the nervous system from both anatomical & functional perspectives
- Gross & microscopic anatomy of nervous tissue

- Neurophysiology, including mechanism of resting membrane potential, production of action potentials, & impulse transmission
- Neurotransmitters & their roles in synaptic transmission
- Sensory receptors & their roles
- Division, origin, & function of component parts of the brain
- Protective roles of the cranial bones, meninges, & cerebrospinal fluid
- Structure & function of cranial nerves
- Anatomy of the spinal cord & spinal nerves
- Physiology of sensory & motor pathways in the brain & spinal cord
- Functions of the autonomic nervous system
- Comparisons of somatic & autonomic nervous systems
- Application of homeostatic mechanisms
- Predictions related to homeostatic imbalance, including disease states & disorders

Module I: Special Senses

Students who have completed this section of the course should be able to identify and describe the major gross and microscopic anatomical components of the eye and ear and explain their functional roles in vision, hearing and equilibrium. Olfaction and gustation are not covered in BIOH 112 due to time constraints.

Topics:

- Gross & microscopic anatomy of the eye
- Roles of specific tissues of the eye in vision
- General gross & microscopic anatomy of hearing & accessory structures of the ear
- Roles of specific tissues and accessory structures of the ear in hearing
- Role of the ear in equilibrium
- Application of homeostatic mechanisms

Grading:

Students will be required to successfully complete an online assessment on the course online resource prior to each of the four scheduled BIOH 112 lab visits. (10 points each)

- Online assessments must be completed with at least an 90% score in order for the student to be approved to teach the lab visit.

Students will be required to develop a teaching presentation for each of their chosen lab rotations throughout the semester. (15 points each)

- Students in the same rotation teaching cohort will be required to post their proposed teaching presentations to a common discussion forum on the course online resource.
- Students will be expected to collaborate with others in their teaching cohort to develop a teaching presentation that will be consistent for that rotation across all of the available lab visits.

Each teaching presentation will be presented to the course instructor prior to the lab visits.

- Presentations will be evaluated for accuracy and clarity by the course instructor on the course meeting scheduled prior to each BIOH 112 cadaver lab visit series. (20 points each)

Students will submit potential exam/quiz questions for the BIOH 112 students to the course online resource prior to each of the exams, and serve as proctors for each exam. (10 points each)

If teaching and proctoring commitments are not honored, students will lose points that will affect the course grade.

- Failure to notify the course instructor of any absences prior to scheduled prosection tutorials and/or exam dates will result in a drop of one letter grade for each occurrence.